



E663
JACC March 12, 2013
Volume 61, Issue 10

Heart Failure

THE IMPACT OF DONOR RENAL FUNCTION ON CARDIAC ALLOGRAFT SURVIVAL: INSIGHTS INTO RENOCARDIAC INTERACTIONS

Oral Contributions

South, Room 102

Sunday, March 10, 2013, 8:15 a.m.-8:30 a.m.

Session Title: Cardiac Transplantation and Mechanical Support

Abstract Category: 15. Heart Failure: Clinical

Presentation Number: 915-4

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Background: In animal models, myocardial necrosis and apoptosis have been observed following experimentally induced renal dysfunction (RD). Given that adverse outcomes remain strongly associated with acute kidney injury even after RD completely normalizes, many have theorized that the adverse cardiac outcomes are a direct result of RD-induced myocardial injury. However, it remains unclear whether the substantial risk associated with RD is the result of the RD itself, or if RD is merely identifying an inherently “sicker” population. As such, we hypothesized that if the adverse cardiovascular outcomes associated with RD are primarily a direct result of irreversible RD-induced myocardial injury, transplantation of a heart from a donor with RD should lead to inferior graft survival.

Methods: Adult patients in the United Network for Organ Sharing registry who underwent cardiac transplantation from 1994 through June 30, 2011 with donor creatinine and urine protein available were evaluated (n=20,438).

Results: The mean donor GFR was 90.5 ± 48.4 ml/min/1.73 m² and 22.3% of donors had RD [estimated glomerular filtration rate (GFR) < 60 ml/min/1.73m²]. Ejection fraction was similar between donors with (61.8% \pm 7.8%) and without RD (61.5% \pm 7.8%, p=0.05). Both donor GFR (HR=1.000, p=0.19) and donor proteinuria (HR=0.999, p=0.96) were unrelated to graft survival. Paradoxically, after adjustment for donor and recipient characteristics, better donor GFR was actually associated with significantly worsened graft survival (HR=1.01 per 10 ml/min/1.73m² higher GFR, p=0.03). However, other donor/pre-transplant factors that could cause subclinical myocardial injury such as age > 40 (HR=1.4, p<0.001), diabetes (HR=1.09, p=0.04), hypertension (HR=1.09, p<0.001), smoking (HR=1.21, p<0.001), and ischemic time > 4 hrs (HR=1.2, p<0.001) were associated with reduced graft survival.

Conclusions: Renal dysfunction in cardiac allograft donors is not associated with reduced post-transplant graft survival. These data support the hypothesis that irreversible myocardial injury induced by RD is not primarily responsible for the strong epidemiologic association between RD and adverse cardiovascular outcomes.